Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of:	)
Modernizing the E-rate	) WC Docket No. 13-184
Program for Schools and Libraries	)

COMMENTS OF THE MISSOURI RESEARCH AND EDUCATION NETWORK RELATED TO THE E-RATE 2.0 FURTHER NOTICE OF PROPOSED RULEMAKING

TABLE OF CONTENTS

I. Introduction

1. The Missouri Research and Education Network (MOREnet) was established in 1991 within the University of Missouri System with the primary purpose to develop, maintain and cultivate applications for electronic interchange in support of the educational research and service missions of its members. MOREnet collaborates with the Missouri Department of Elementary and Secondary Education, the Secretary of State's Office and the Department of Higher Education to deliver secure, reliable and robust Internet connectivity to public K-12, publicly funded libraries and higher education member organizations. MOREnet reduces the cost of connectivity, support and shared resources by creating a common network and support structure for all research and education entities in the state. Through these collaborations, MOREnet has rapidly grown in membership and continues to represent an overwhelming majority of Missouri public K-12 school districts, publicly funded libraries and higher education institutions.

II. Position Overview

2. MOREnet applauds the FCC's efforts to modernize the E-rate program to bring it more in line with current technology usage and encourage the adoption of consortia as a means to lower costs and increase both the performance and utility of broadband connections to schools and libraries.

3. MOREnet believes that it is important to encourage the adoption of common sense rules and practices to ensure the E-Rate program achieves its goals. It is important to evaluate both cost and network performance to utilize the full value of any broadband service. Encouraging the creation of consortia should go beyond just cost savings to ensure that the broadband network can be reliably and effectively used by schools and libraries. In markets where competition drives price and availability, existing rules and practices can effectively achieve the goals of the program. However, there are significant portions of the market where competition lags and broadband availability, cost performance and technology adoption do not support the capacity requirements and funding availability of today and tomorrow's schools and libraries. This second marketplace will not change by itself.

III.   Two Marketplaces

4. MOREnet is concerned that the FCC is looking for a single set of rules when there are clearly two marketplaces impacting educational opportunities and the cost of the program. There is a dynamic and robust marketplace with significant infrastructure and competition driving down pricing and driving up capacity/performance. But a second and potentially larger marketplace exists with insufficient population to spur investment which results in stagnant infrastructure, performance challenges and pricing. This disparity is even more pronounced when considering the greater capacities and network performance required by schools and libraries. Characteristics of the stagnant marketplace are little or no competition, slow technology adoption and infrequent private sector investment. Education opportunities in this marketplace which depend on high capacity, high performance are typically costly or simply unavailable.

5. MOREnet urges the FCC to consider separate rule sets to accomplish two different goals – shorter contract terms to take advantage of lower costs and higher capacities in dynamic markets while removing barriers, increasing flexibility and encouraging infrastructure investment in high cost, stagnant markets. Bringing cost-effective, high-capacity connectivity using current technologies to schools and libraries in these markets is the only way to bring educational parity to students and patrons no matter where they live.

IV.   Supporting Consortia

6. MOREnet strongly supports the FCC direction to prioritize the review of consortia filings. (Para 168) These filings tend to be larger and require substantially more effort to review. MOREnet has experienced multi-year delays for filing approvals. Delays which tie up funding for multiple years and discourage vendor participation, consortium formation or participation in a consortium depending on who is funding the eligible portion of the connection. If the district or library pays the full cost up front, the member bears the cost for two years. Funds they could use to accomplish their mission months or years earlier if they were not a consortium member. If the consortium or vendor allows the district or library to pay only the non-eligible portion, the consortium or vendor ties up operating capital for long periods of time. Operating capital which could be accomplishing the mission of the consortium. Such delays discourage consortium membership and increase the costs of the service.

7. Consortia filings are created for a variety of reasons, all of them presumably because each consortium member would benefit from the collective effort of the consortium. However, it is important to recognize that each consortium is formed under unique circumstances and for various purposes. The differences between consortiums can be best grouped in three distinct types; Procurement only consortia, Filing consortia, and State Network consortia.

8. In Procurement only and Filing consortia, the member benefits tend to be mutually shared among the members given the consortium advantage is collective purchasing power and E-rate program filings.

9. State Network consortia tend to offer mutually shared benefits such as Procurement and Filing along with additional benefits which are optional or specific to a membership subgroup. Fundamental to most State networks is responsibility to serve the greater public good through open membership to entire entity groups, as opposed to selective membership. Entity groups typically include private, public or both K12, public libraries, colleges and universities, health care providers and others.

10. State Network consortium member benefits include collective purchasing power and usually E-rate program filings, as well as greater access to technology support, training, network security, defined network performance, fully dedicated Committed Information Rate (CIR), network management services, network support, Wi-Fi assessment and management, and other services to support the network. These benefits impact each consortium member in varying degrees with some being more important than others to the individual member. The end result, however, is all consortium members gain financial and technological benefits from the consortium.

11. The emphasis placed on price per megabit is well-understood when evaluating consortia effectiveness given the program rules regarding cost effectiveness, Lowest Corresponding Price (LCP) and others. Like any consortia or individual applicant, the lowest cost broadband solutions are desired and sought by State networks. But where other consortia are focused solely on more bandwidth and lowest price, State networks approach broadband holistically. State networks typically have the experience and infrastructure in place to design in end-to-end reliability across providers and adopt emerging technologies to increase the utility, dependability and cost-effectiveness of each member's broadband connection.

V. Additional Discounts for Consortia

12. MOREnet supports the consideration by the FCC for an additional five percent discount rate for consortia (para 294). We understand the need for criteria which separate substantial consortia which provide service and pricing advantages (State Networks) from small consortia which might form solely for the additional discount. State Network consortia bear the burden of procurement and form filings as do Procurement and Filing only consortia. However, State Network consortia are further committed to improving broadband solutions on a large scale basis. This commitment of State Networks directly supports the Commission's Internet Access target bandwidth goals and is in alignment with the goal of developing best practices and benchmarks regarding network utilization, optimization, performance and management.

13. Most of the minimal consortium attributes suggested by the Education Coalition seem appropriate. MOREnet believes that serving at least 30% of the student population, school districts or Educational Service Agencies make sense; a formal membership open to all qualified entities; and governance by the membership are critical attributes. Further, performance of large scale, centralized procurement should be the key attribute for the additional consortia discount.

VI. Master Contracts

14. As MOREnet understands master contracts, they would establish a uniform rate for products and services. Such a contract may secure superior pricing for uniform commodity products – hardware, hourly rates for consulting services, etc. – but will not likely yield price advantages for unique services – fiber to a particular site, wireless installation in a particular school building, etc.

15. If a master contract requires uniform pricing for gigabit Ethernet service or fiber connections across the state it is likely that uncertainty about take rates, which sites will order the service (some sites are significantly more expensive), unexpected costs and other concerns will cause respondents to pad the pricing to ensure their profit margin. These inflated prices have a negative impact on the E-rate program. As such, MOREnet cannot support the requirement of master contracts for high speed connectivity as a method of lowering costs or as a minimum requirement for the additional consortia discount rate.

VII. Network Performance

16. Price performance is important to the success of the E-rate program but network performance is critical to meeting educational needs of schools and libraries. Whole networks must be engineered from end-to-end for performance. To this end, MOREnet requires that participating network providers deliver:
    - Full Committed Information Rate (CIR) for the full contracted bandwidth even on an aggregated or over-subscribed network
    - symmetrical bandwidth for both uploads and downloads
    - low latency so that network traffic is delivered in a timely fashion across congested vendor networks
    - low packet loss so that the vast majority of sent data is received the first time without retransmission
    - low jitter so that network traffic arrives in an even, predictable manner
    - high availability is the first level of a reliable network

17. Full contracted CIR is important for comparing responses during the procurement process to ensure an "apples-to-apples" comparison. Full CIR is critical for supporting on-line educational activities on a congested provider network and ensure the library patron has access to on-line resources, governmental applications and personal on-line applications (submitting resumes, taking on-line courses, filing insurance claims, etc.) during peak usage times.

18. Symmetrical bandwidth has become important as applications run off-premise ("in the cloud"), high-resolution, two-way video and students build larger on-line projects (multimedia presentations, CAD designs, etc.) and upload them to shared spaces.

19. Low latency, low packet loss and jitter are critical to real-time applications. Subpar latency, packet loss and jitter cause drop-outs and echo on voice applications and stuttering, freezing, pixilation and synchronization problems on in video applications.

20. These network performance metrics must be incorporated into the network design, stipulated in procurement requests, written into contracts and measured periodically to ensure compliance. The FCC already has access to an accurate and powerful tool for independently measuring network performance. The SamKnows program has been successfully monitored US ISP performance on a random basis for the FCC.

21. Contracted symmetrical network capacity and network performance is even more critical during simultaneous events that stress the network such as mandated standardized testing, end-of-course testing, multi-site interactive video classes and large data-intensive classes. In one case, a Missouri school independently contracted for 40 megabits but the actual throughput of the resulting connection measured only 4 megabits. Only 10% of the contracted bandwidth was available for student educational activities. If cost is the only criteria, the educational needs of schools and libraries (and the true value of the E-rate program) are not meet.

VIII.   Conclusion

22. MOREnet commends the FCC's vision and courage to improve the highly successful E-Rate program which has enabled schools and libraries to drive down the cost of educational resources and increase access to cost-saving technologies for many years. The FCC's emphasis on a "whole network" approach with wireless will support current technology usage and will enable E-Rate applicants to lower their costs and increase access through "Bring-Your-Own-Device" (BYOD) and 1:1 strategies. The proposed support for network consortia should lower program costs and increase access for more schools and libraries.

23. MOREnet appreciates the opportunity to emphasize several points: the importance of network performance and transparency (i.e. actual throughput = advertised throughput) in conjunction with cost performance when evaluating the value of the connectivity; the value of consortia beyond volume pricing and the need for flexibility and options in stagnant marketplaces with high costs, low competition and slow adoption of current technologies.